

# **MicroVAX Site Preparation**

Order Number EK-239AC-SP-003

**digital equipment corporation  
maynard, massachusetts**

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## Preface

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This manual is a guide to preparing a site for a MicroVAX system. It describes the physical, environmental, and power requirements of each MicroVAX system and expander.

To ensure smooth operation and installation of a MicroVAX system or expander, your site should meet the requirements found in this document *before* the arrival of your system shipment.

### Intended Audience

This manual is intended for DIGITAL service personnel and DIGITAL customers who wish to install their MicroVAX systems and intend to perform self-maintenance.

**NOTE:** *DIGITAL recommends that a DIGITAL service representative install your system.*

If you are a customer preparing your site for a MicroVAX system, please be aware that DIGITAL provides a site preparation service. If you decide you would like a DIGITAL professional to prepare your site, contact your DIGITAL service representative.

### Systems, Enclosures, and Expanders

MicroVAX systems, enclosures, and expanders that are covered by this manual are listed in the following table. To use this table, look up the name of your system. Then move across to the enclosure or expander your system comes in. Go to Chapter 2 to find the specifications for each enclosure and expander.

## MicroVAX Systems, Enclosures and Expanders Covered by This Manual

System	Enclosure	Expander
MicroVAX II	BA23, BA123	R215F
MicroVAX II	H9642	None
MicroVAX 3300	BA215	R215F
VAXserver 3300	BA215	R215F
MicroVAX 3400	BA213	R215F
VAXserver 3400	BA213	R215F
MicroVAX 3500	BA213	R215F, B213A, B213F
VAXserver 3500	BA213	R215F, B213A, B213F
MicroVAX 3600	H9644	H9644
VAXserver 3600	H9644	H9644
VAXserver 3602	H9644	H9644
MicroVAX 3800	BA213	R215F, B213F
VAXserver 3800	BA213	R215F, B213F
MicroVAX 3900	H9644	H9644
VAXserver 3900	H9644	H9644

## Manual Structure

This manual contains two chapters and one appendix. It is organized as follows:

- Chapter 1 contains general information about the physical, environmental and power requirements for MicroVAX systems.
- Chapter 2 contains specific information about each MicroVAX system configuration. The following information is provided:
  1. System dimensions (both with and without the shipping carton)
  2. Acceptable temperature and humidity ranges (operating and nonoperating)
  3. Electrical requirements
  4. Noise levels
- The appendix lists the power cable order numbers for each MicroVAX system and expander for both 120 Vac and 240 Vac operation.

Use this manual to prepare your site for your MicroVAX system. Refer to Chapter 1 for general environmental requirements. Then refer to Chapter 2 for the specific requirements for your MicroVAX system.



## Conventions

The following conventions are used in this book:

Convention	Meaning
<b>NOTE</b>	Provides general information about the current topic.
<b>CAUTION</b>	Provides information to prevent damage to equipment or software.
<b>WARNING</b>	Provides information to prevent personal injury.



## Chapter 1

# Physical Requirements

---

A MicroVAX system's physical requirements are determined by system dimensions (both before and after the shipping carton has been removed), space for cabinet doors to swing open, space for peripheral computer equipment such as printers and terminals, and allowances for the noise emission level of the system.

### 1.1 When Your Shipment Arrives

Your MicroVAX system is shipped in one large box. Other boxes that arrive with the shipment may contain terminals, printers, software, and the Customer Hardware Information kit. When the system arrives, you should inspect it with a DIGITAL service representative to ensure that the system and all ordered options have arrived undamaged. When you are ready to begin installation, find the Customer Hardware Information kit and begin using the *Installation* manual to install your MicroVAX system.

### 1.2 Space Requirements

Before unpacking any system, make sure you have enough space to remove the system from its shipping container. Also make sure you leave enough space around the system so it can be serviced. Use information in Chapter 2 to determine your system's dimensions.

#### 1.2.1 Space for Additional Equipment and Cabling

In addition to the space required for the MicroVAX system or expander, you should ensure there is enough space for terminals, printers, mass storage media, printer paper, and other necessary supplies.

If you plan to connect your system to peripheral devices such as printers, terminals, or modems, you will need additional cabling. Cables that connect the system to peripheral devices must be ordered separately.

When planning cable routing for multiple-terminal systems, you should consider factors such as safety, convenience, future expansion, and cost. The system installer has other special factors to consider when cabling a multiple-terminal system on more than one floor in the same building, or in more than one building. DIGITAL offers several cable types for these



applications, and DIGITAL service personnel are available to help you plan your installation. Your sales representative can provide more information.

**NOTE:** *Cabling from peripheral devices should already be in place and labeled before the system is installed.*

## 1.3 Operating Environment

Computer systems are subject to discharge of static electricity, temperature changes, and humidity. These conditions can affect the operation and overall dependability of the computer system.

Your system should be installed in a well-ventilated area, where the temperature and humidity ranges listed for your system are maintained throughout the year. Rapid temperature changes may affect system performance. Therefore, do not operate systems near heating or cooling devices, large windows, or doors that open to the outside. Air should contain a minimum of dust and other abrasive contaminants.

Mass storage media and other computer supplies, including paper, should be kept at the same temperature and humidity as that of the computer area.

### 1.3.1 Static Electricity

Static electricity is a common problem for microcomputer systems. It can cause system failure and loss of data. The most common source of static buildup is contact between people and carpeting or clothing. Low humidity allows the greatest buildup of static charges.

To minimize static buildup, follow these guidelines.

- Maintain relative humidity of at least 40 percent.
- Locate your system away from busy office corridors.
- If possible, avoid using carpeting in the computer area. If you install carpeting, use antistatic carpeting. If carpeting is already installed, place a grounded, antistatic mat under the system.
- If your site has antistatic floors, carpeting, or mats, make sure you maintain their antistatic properties by following the manufacturer's recommendations for cleaning.

### 1.3.2 Temperature and Humidity Ranges

To function properly, each MicroVAX system and expander must operate in an environment with acceptable temperature and humidity ranges. To determine the appropriate temperature and humidity ranges for your system, refer to Chapter 2 and the specifications for your particular system.

When calculating the operating temperature in your computer environment, consider the heat that the system, peripherals, and other equipment in the computer room generates. See the tables in Chapter 2 for the amount of heat dissipated by each MicroVAX system and expander enclosure.

### 1.3.3 Electrical Requirements

In determining the electrical requirements of a MicroVAX system configuration, consider the following:

- Whether 100 Vac, 120 Vac, or 240 Vac is used
- What country the system is located in
- Voltage range
- Power source phase
- Nominal frequency
- Frequency range
- Steady-state current
- Power consumption

When you are ready to use the above information, turn to Chapter 2 and find the electrical requirements for your system.

The power source should be able to handle the original system and allow for system expansion. DIGITAL recommends a dedicated circuit from the power source to each MicroVAX system configuration. A dedicated, isolated ground circuit provides electrical isolation from possible power surges or electrical noise caused by other electrical equipment. You should not connect any other equipment such as air conditioners, office copiers, or coffee pots to the same circuit as the MicroVAX system.

If you cannot avoid power disturbances, your system will need additional power-conditioning equipment. For more information, contact your DIGITAL sales representative.

**NOTE:** *MicroVAX system configurations operate at either 100, 120, or 240 Vac. To operate the MicroVAX system configuration at 240 Vac, obtain the*



*power cable for use in your country. The appendix lists the power cables used to operate each system at 240 Vac. To operate the MicroVAX system configuration at 100 or 120 Vac, use the power cable that is included with your system shipment.*

### **1.3.4 Acoustics**

Computer systems generate noise. Higher than acceptable noise levels can adversely affect a work environment. MicroVAX systems using the H9642 or H9644 cabinet emit more noise than is acceptable for office use and should be installed in a computer room. The tables for each system suggest where to place the MicroVAX enclosure and expander.



## Chapter 2

# Site Preparation Specifications

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This chapter lists each enclosure's dimensions, along with acceptable system temperature and humidity ranges, electrical requirements and acoustic levels. The section on your system gives you information to use in preparing your site for your MicroVAX system.

To find which enclosure your system comes in, go to the table in the Preface. Find your system. Then find the enclosure or expander your system includes. Look up the specifications for that enclosure or expander in this chapter.

### 2.1 Specifications for the BA23 System

Use the information in this section to prepare your site for MicroVAX systems in the BA23 enclosure.

#### 2.1.1 Dimensions

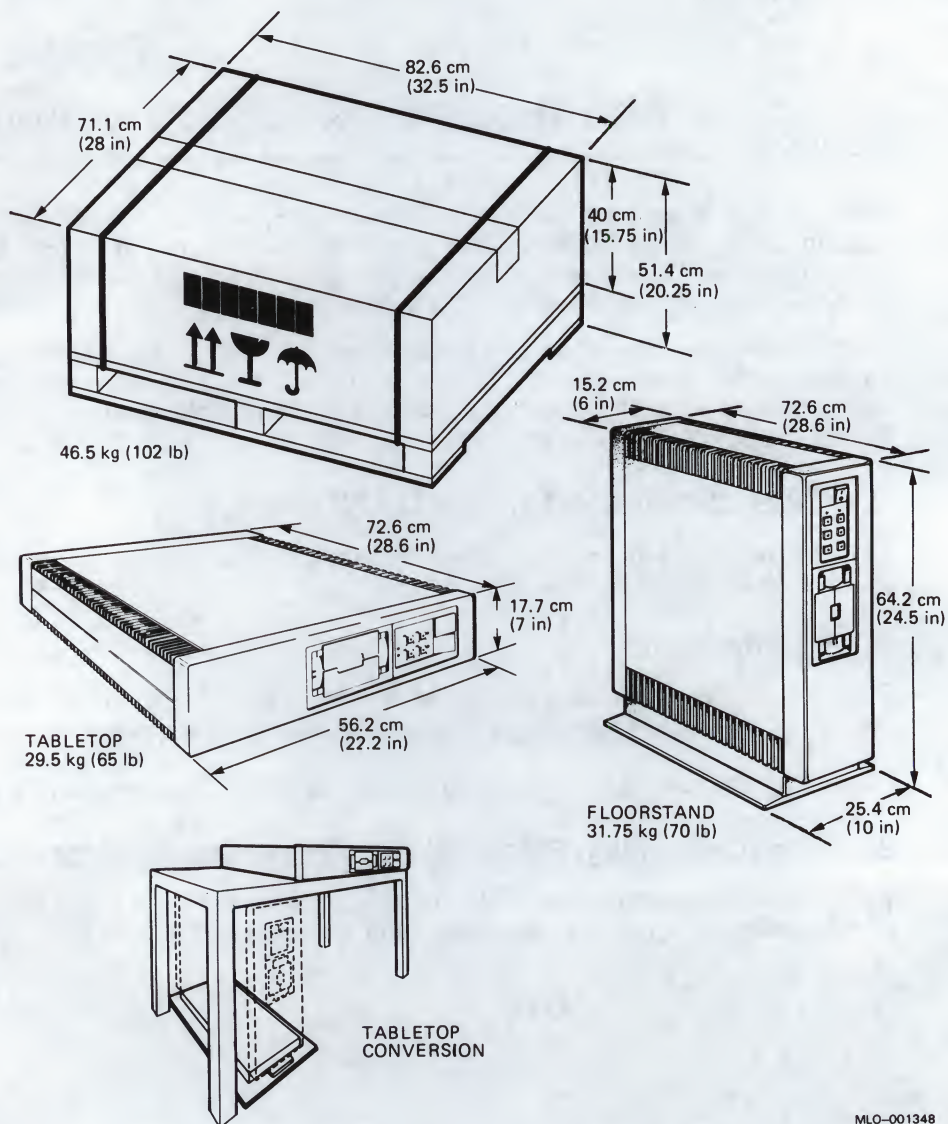
Figure 2-1 shows the dimensions of a MicroVAX system in the BA23 enclosure. The figure also shows the dimensions of the shipping container.

**CAUTION:** *Use at least two people to handle the system and terminal boxes.*

#### 2.1.2 Heat, Humidity, Electrical Requirements, and Acoustics

The BA23 enclosure operates within or at the values listed for temperature and humidity, electrical requirements, and acoustics in Table 2-1.

**Figure 2-1: Dimensions of a MicroVAX System in the BA23 Enclosure**



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**Table 2–1: BA23 System Specifications****Heat Dissipation, Temperature, and Humidity Ranges**

<b>Condition</b>		<b>Measure</b>
Heat dissipation		1177.4 BTU/h
Temperature	Operating:	10°C to 40°C 50°F to 104°F
	Nonoperating:	–40°C to 60°C –40°F to 140°F
Temperature rate of change	Operating:	11°C per hour maximum 19.8°F per hour maximum
	Nonoperating:	10% to 95%
Relative humidity	Operating:	20% to 80% (noncondensing)
	Nonoperating:	10% to 95%
Maximum altitude	Operating:	2440 m (8000 ft)
	Nonoperating:	4900 m (16,000 ft)

**NOTE:** Decrease the operating temperature range values by 1.8°C per 1000 m above sea level (1°F per 1000 ft).

**Electrical Requirements**

<b>Nominal AC Voltage ⇒</b>	<b>100 Vac</b>	<b>120 Vac</b>	<b>220–240 Vac</b>
Voltage range	90 to 110 Vac	104 to 128 Vac	191 to 256 Vac
Power source phase	Single	Single	Single
Nominal frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
Frequency range	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz
Maximum steady-state current at nominal voltage	5.3 A	4.4 A	2.2 A
Maximum steady-state current at minimum voltage	6 A	5.5 A	2.7 A
Maximum inrush current	100 A	100 A	100 A
Maximum power consumption	345 W	345 W	345 W



**Table 2-1 (Cont.): BA23 System Specifications**

**Operating Acoustic Emission Levels**

<b>LNPE (B)</b>	<b>LPA (dB)</b>
6.1	48
Recommended placement	Open office environment

LNPE = Noise power emission level (A-weighted sound power level) measured in bels reference 1 picowatt.

LPA = Sound pressure measured in decibels at 1.0 m from the front edge of the unit and 1.5 m above the floor.

Levels may be lower than those shown, depending on the kind and number of mass storage devices in the system.

All data measured in accordance with ANSI S12.10-1985 (American National Standards Institute) and ISO/DIS 7779 (International Standards Organization).

**NOTE:** *To operate the BA23 enclosure at 240 Vac, obtain the appropriate power cable for use in your country. See the appendix for order numbers.*

## **2.2 Specifications for the BA123 System**

Use the information in this section to prepare your site for MicroVAX systems in the BA123 enclosure.

### **2.2.1 Dimensions**

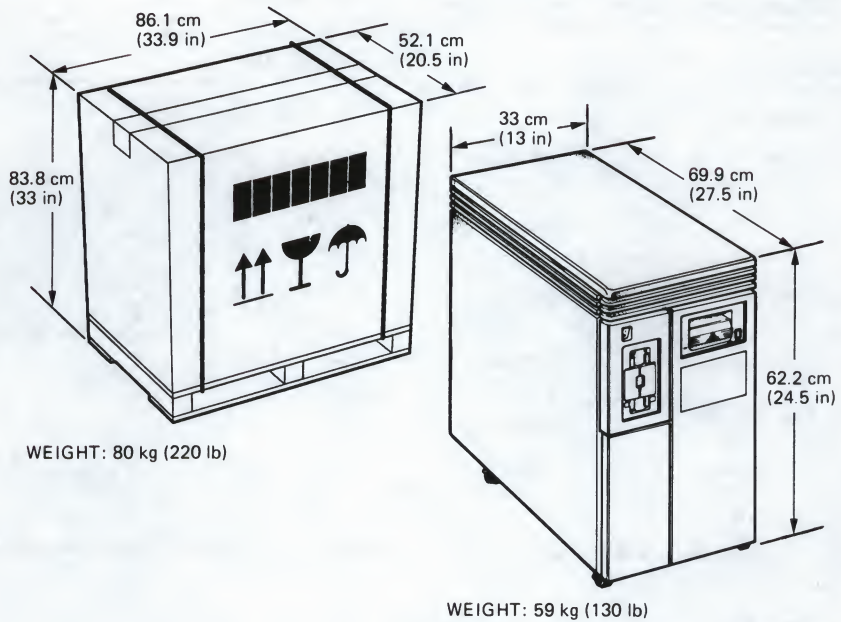
Figure 2-2 shows the dimensions of a MicroVAX system in the BA123 enclosure. The figure also shows the dimensions of the shipping container.

**CAUTION:** *Use at least two people to handle the system and terminal boxes.*

### **2.2.2 Heat, Humidity, Electrical Requirements, and Acoustics**

The BA123 enclosure operates within or at the values listed in Table 2-2 for temperature and humidity, power requirements, and noise levels.

**Figure 2-2: Dimensions of a MicroVAX System in the BA123 Enclosure**



MLO-001349

**Table 2-2: BA123 System Specifications****Heat Dissipation, Temperature, and Humidity Ranges**

<b>Condition</b>		<b>Measure</b>
Heat dissipation		2355 BTU/h
Temperature	Operating:	10°C to 40°C 50°F to 104°F
	Nonoperating:	-40°C to 60°C -40°F to 140°F
Temperature rate of change	Operating:	11°C per hour maximum 19.8°F per hour maximum
	Nonoperating:	
Relative humidity	Operating:	20% to 80% (noncondensing)
	Nonoperating:	10% to 95%
Maximum altitude	Operating:	2440 m (8000 ft)
	Nonoperating:	4900 m (16,000 ft)

**NOTE:** Decrease the operating temperature range values by 1.8°C per 1000 m above sea level (1°F per 1000 ft).

**Electrical Requirements**

<b>Nominal AC Voltage ⇒</b>	<b>100 Vac</b>	<b>120 Vac</b>	<b>220-240 Vac</b>
Voltage range	90 to 110 Vac	104 to 128 Vac	191 to 256 Vac
Power source phase	Single	Single	Single
Nominal frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
Frequency range	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz
Maximum steady-state current at nominal voltage	10.5 A	8.8 A	4.4 A
Maximum steady-state current at minimum voltage	12 A	11 A	5.5 A
Maximum inrush current	100 A	100 A	100 A
Maximum power consumption	690 W	690 W	690 W

**NOTE:** To operate the BA123 enclosure at 240 Vac, obtain the appropriate power cable for use in your country. See the appendix for order numbers.



**Table 2–2 (Cont.): BA123 System Specifications**

**Operating Acoustic Emission Levels**

<b>LNPE (B)</b>	<b>LPA (dB)</b>
6.0	46
Recommended placement	Open office environment

LNPE = Noise power emission level (A-weighted sound power level) measured in bels reference 1 picowatt.

LPA = Sound pressure measured in decibels at 1.0 m from the front edge of the unit and 1.5 m above the floor.

Levels may be lower than those shown, depending on the kind and number of mass storage devices in the system.

All data measured in accordance with ANSI S12.10–1985 (American National Standards Institute) and ISO/DIS 7779 (International Standards Organization).

## **2.3 Specifications for the BA213 System and the B213A/B213F Expander**

Use the information in this section to prepare your site for MicroVAX systems in the BA213 enclosure, and for the B213A and B213F expanders.

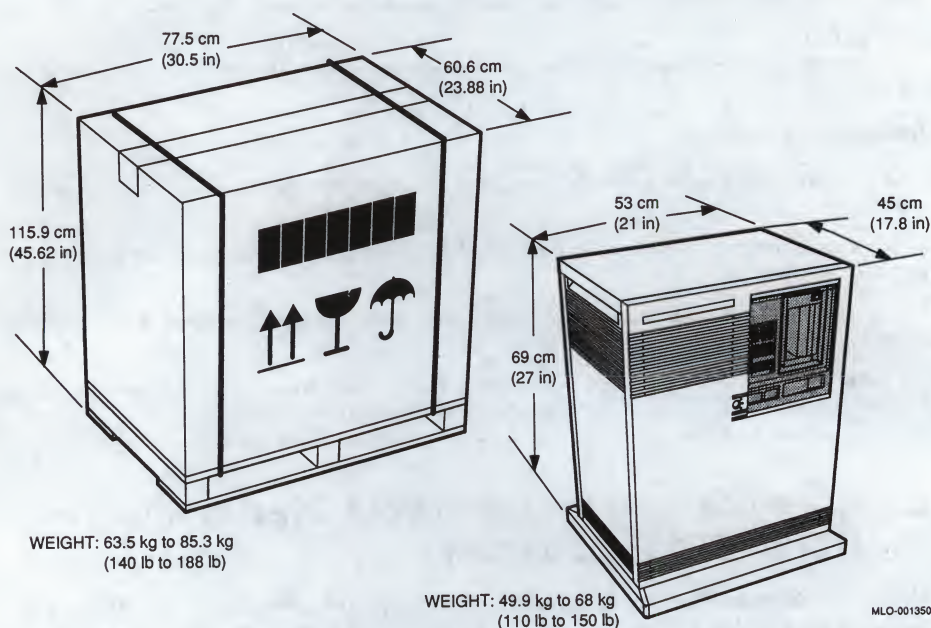
### **2.3.1 Dimensions**

Figure 2–3 shows the dimensions of a MicroVAX system in the BA213 enclosure and for the B213A and B213F expanders. The figure also shows the dimensions of the container used to ship the BA213 enclosure and the B213A and B213F expanders.

**CAUTION:** *Use at least two people to handle the system and terminal boxes.*

You must leave at least 1 m (39 in) of clearance at the front of the system, for access to system controls. You also must leave at least 5 cm (2 in) of clearance at the sides and rear for airflow. Since the base of the enclosure is 5 cm (2 in) wider than the cabinet in front and rear, you can place the rear of the system against a wall or table, and the system will have enough room for adequate airflow.

**Figure 2-3: Dimensions of a MicroVAX System in the BA213 Enclosure and for the B213A and B213F Expanders**



### 2.3.2 Heat, Humidity, Electrical Requirements, Power Cables, and Acoustics

The BA213 enclosure, B213A and B213F expanders operate within or at the values for temperature and humidity, power requirements, and noise levels in Table 2-3. This table also lists power cables and components you need to operate the B213A and B213F expanders with the MicroVAX 3500 and MicroVAX 3800 systems.

**NOTE:** *The B213F expander cannot be used with the MicroVAX 3600 or 3900 systems.*



**Table 2–3: BA213 System or B213A/B213F Expander Specifications**

**Heat Dissipation, Temperature, and Humidity Ranges**

<b>Condition</b>		<b>Measure</b>
Heat dissipation		2304 BTU/h
Temperature	Operating:	10°C to 40°C 50°F to 104°F
	Nonoperating:	–40°C to 66°C –40°F to 151°F
Temperature rate of change	Operating:	11°C per hour maximum 19.8°F per hour maximum
Relative humidity	Operating:	20% to 80% (noncondensing)
	Nonoperating:	10% to 90%
Maximum altitude	Operating:	2440 m (8000 ft)
	Nonoperating:	4900 m (16,000 ft)

**NOTE:** Decrease the operating temperature range values by 1.8°C per 1000 m above sea level (1°F per 1000 ft).

**Electrical Requirements**

<b>Nominal AC Voltage ⇒</b>	<b>101 Vac</b>	<b>120 Vac</b>	<b>220–240 Vac</b>
Voltage range	90 to 110 Vac	104 to 128 Vac	190 to 256 Vac
Power source phase	Single	Single	Single
Nominal frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
Frequency range	49 to 61 Hz	49 to 61 Hz	49 to 61 Hz
Maximum steady-state current at nominal voltage	10.2 A	8.6 A	4.7 A
Maximum steady-state current at minimum voltage	11.4 A	9.9 A	5.4 A
Maximum inrush current	100 A	100 A	100 A
Maximum power consumption with 0.65 power factor	1030 W	1030 W	1030 W

**NOTE:** To operate the BA213 enclosure at 240 Vac, obtain the appropriate power cable for use in your country. See the appendix for order numbers.



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**Power Cables and Components for Use with MicroVAX 3500/3800 Systems with BA213A or B213F Expanders**

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**120 Vac**

886A (Controlled Power Switch)

17-00083-43

**240 Vac**

886B (Controlled Power Switch)

17-00365-06

Country-specific power cable for the 886B controlled power switch

**NOTES:** One 17-00083-43 power cable is included with the MicroVAX 3500 or MicroVAX 3800 system shipment; a second is included with the B213A expander shipment.

The country-specific power cable is included with the B213A expander shipment, but must be specified in the customer order. See the appendix for order numbers.

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**Operating Acoustic Emission Levels**

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**LNPE (B)**

5.8

Recommended placement

**LPA (dB)**

43

Open office environment

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LNPE = Noise power emission level (A-weighted sound power level) measured in bels reference 1 picowatt.

LPA = Sound pressure measured in decibels at 1.0 m from the front edge of the unit and 1.5 m above the floor.

Levels may be lower than those shown, depending on the kind and number of mass storage devices in the system.

All data measured in accordance with ANSI S12.10-1985 (American National Standards Institute) and ISO/DIS 7779 (International Standards Organization).

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### **2.3.3 B213A Expander and B213F Expander: Additional Power Requirements**

The B213F expander can be used with the MicroVAX 3400, 3500, and 3800 systems only. The B213A is RA based and the B213F is RF based. Although the B213F has the same specifications as the B213A expander, it cannot be used with MicroVAX 3600 or 3900 systems.

If you are preparing a site for the B213A expander, several additional power requirements must be considered.

Use the following information to ensure you have all required power cables and components, which differ depending on whether the B213A is to be used with the MicroVAX 3500 or the MicroVAX 3600 system. The MicroVAX 3300, 3400, 3800, and 3900 systems do not use the B213A expander.

#### **MicroVAX 3500 with the B213A or B213F Expander and MicroVAX 3800 System with the B213F Expander**

To operate a B213A or B213F expander with the MicroVAX 3500 system, or to operate the B213F expander with the MicroVAX 3800 system, you need a controlled power switch (886A/B) and from one to three additional power cables.

**CAUTION:** *Depending on whether you are using 120 Vac or 240 Vac, you will also need an electrical receptacle rated at the following amperage:*

- *For 120 Vac operation, MicroVAX 3500 systems with the B213A expander and MicroVAX 3800 systems with the B213F expander must use a NEMA (National Electrical Manufacturers Association) L5-30R ac electrical receptacle rated at 30 A (U.S.).*
- *For 240 Vac operation, MicroVAX 3500 systems with the B213A expander and MicroVAX 3800 systems with the B213F expander require a minimum service of 10 A with a country-specific electrical receptacle.*

#### **MicroVAX 3600 System with the B213A Expander**

To operate the B213A expander with the MicroVAX 3600 system, you will need two separate power sources: one for the MicroVAX 3600, and another for the B213A expander. DIGITAL recommends that both power lines come from the same power panel to ensure the same ground potential for both units.

Use the appropriate country-specific power cable for each unit. The order numbers of the power cables are listed in the appendix.



## 2.4 Specifications for the BA215 System and the R215F Expander

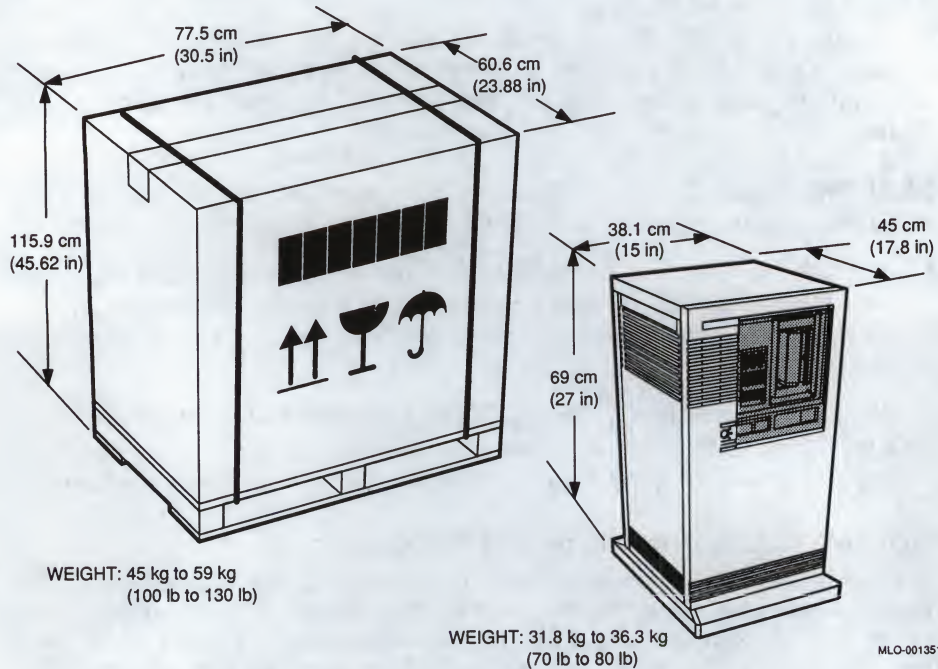
Use the information in this section to prepare your site for MicroVAX systems in the BA215 enclosure and for the R215F expander.

### 2.4.1 Dimensions

Figure 2-4 shows the dimensions of a MicroVAX system in the BA215 enclosure. The figure also shows the dimensions of the container used to ship the BA215 and the R215F.

**CAUTION:** *Use at least two people to handle the system and terminal boxes.*

**Figure 2-4: Dimensions of a MicroVAX System in the BA215 Enclosure**





You must leave at least 1 m (39 in) of clearance at the front of the system, for access to system controls. You also must leave at least 5 cm (2 in) of clearance at the sides and rear for airflow. Since the base of the enclosure is 5 cm (2 in) wider than the cabinet in front and rear, you can place the rear of the system against a wall or table, and the system will have enough room for adequate airflow.

### **2.4.2 Heat, Humidity, Electrical Requirements, and Acoustics**

MicroVAX systems in the BA215 enclosure and the R215F expander operate within or at the values listed in Table 2-4. These values include temperature, humidity, power, and acoustical levels.

**NOTE:** *The R215F can be used with the MicroVAX 3300, 3400, 3500, and 3800 systems.*

**Table 2-4: BA215 System or R215F Expander Specifications**

**Heat Dissipation, Temperature, and Humidity Ranges**

<b>Condition</b>		<b>Measure</b>
Heat dissipation		1178 BTU/h
Temperature	Operating:	10°C to 40°C 50°F to 104°F
	Nonoperating:	-40°C to 66°C -40°F to 151°F
Temperature rate of change	Operating:	11°C per hour maximum 19.8°F per hour maximum
Relative humidity	Operating:	20% to 80% (noncondensing)
	Nonoperating:	10% to 90%
Maximum altitude	Operating:	2438 m (8000 ft)
	Nonoperating:	4900 m (16,000 ft)

**NOTE:** Decrease the operating temperature range values by 1.8°C per 1000 m above sea level (1°F per 1000 ft).

**Electrical Requirements**

<b>Nominal AC Voltage ⇒</b>	<b>101 Vac</b>	<b>120 Vac</b>	<b>220-240 Vac</b>
Voltage range	88 to 110 Vac	93 to 132 Vac	176 to 264 Vac
Power source phase	Single	Single	Single
Nominal frequency	50 to 60 Hz	50 to 60 Hz	50 to 60 Hz
Frequency range	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz
Maximum steady-state current at nominal voltage	5.2 A	4.4 A	2.4 A
Maximum steady-state current at minimum voltage	8.3 A	7.2 A	3.9 A
Startup current (30 seconds) at nominal voltage	7.1 A	5.9 A	3.1 A
Maximum inrush current	50 A	50 A	50 A

**Table 2-4 (Cont.): BA215 System or R215F Expander Specifications**

<b>Electrical Requirements</b>			
<b>Nominal AC Voltage ⇒</b>	<b>101 Vac</b>	<b>120 Vac</b>	<b>220-240 Vac</b>
Maximum power consumption	340 W	340 W	340 W

**NOTE:** To operate the BA215 enclosure or the R215F expander at 240 Vac, obtain the appropriate power cable for use in your country. See the appendix for order numbers.

#### **Operating Acoustic Emission Levels**

<b>LNPE (B)</b>	<b>LPA (dB)</b>
6.1	48
Recommended placement	Open office environment

LNPE = Noise power emission level (A-weighted sound power level) measured in bels reference 1 picowatt.

LPA = Sound pressure measured in decibels at 1.0 m from the front edge of the unit and 1.5 m above the floor.

Levels may be lower than those shown, depending on the kind and number of mass storage devices in the system.

All data measured in accordance with ANSI S12.10-1985 (American National Standards Institute) and ISO/DIS 7779 (International Standards Organization).

## **2.5 Specifications for the H9642 Cabinet**

Use the information in this section to prepare your site for MicroVAX systems in the H9642 cabinet.

### **2.5.1 Dimensions**

Systems that use the H9642 cabinet are shipped in large containers secured to wooden pallets by four metal hold-down brackets. Other containers arriving with your shipment may contain terminals, printers, software, and other options. Plan to use about 3 m (10 ft) of floor space for removing each cabinet from its pallet.

**WARNING:** *Do not try to move or lift this equipment without a forklift.*

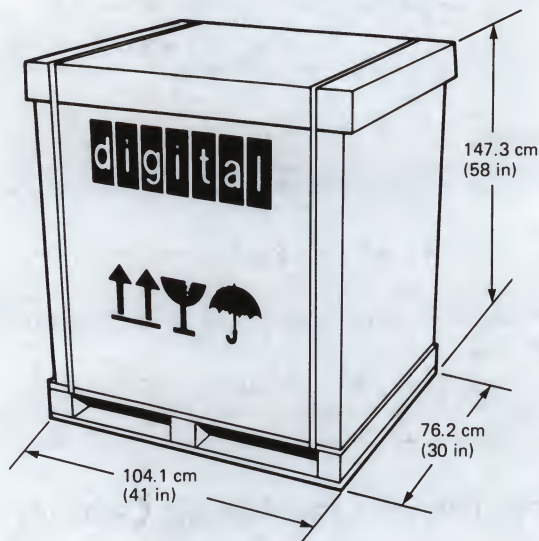


The cabinet is mounted on four wheels and has four adjustable leveling feet for stability.

The weight of systems using the H9642 cabinet varies from 168 kg to 311 kg (358 lb to 685 lb), depending on the mass storage subsystems contained in the cabinet. Plan your installation accordingly. A fully loaded system with RA60 and RA81 disk drives weighs 311 kg (685 lb).

Figure 2-5 shows the dimensions of the shipping container of a MicroVAX system in the H9642 cabinet.

**Figure 2-5: Dimensions of the Shipping Container of a MicroVAX System in the H9642 Cabinet**



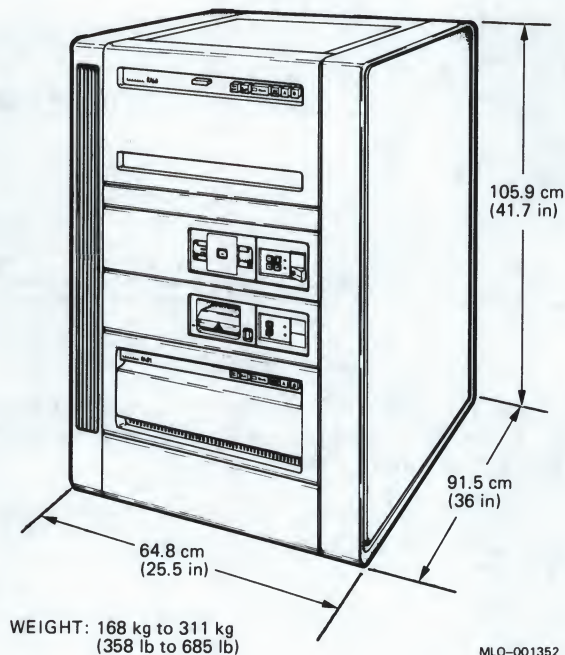
WEIGHT: 168 kg to 311 kg  
(358 lb to 685 lb)

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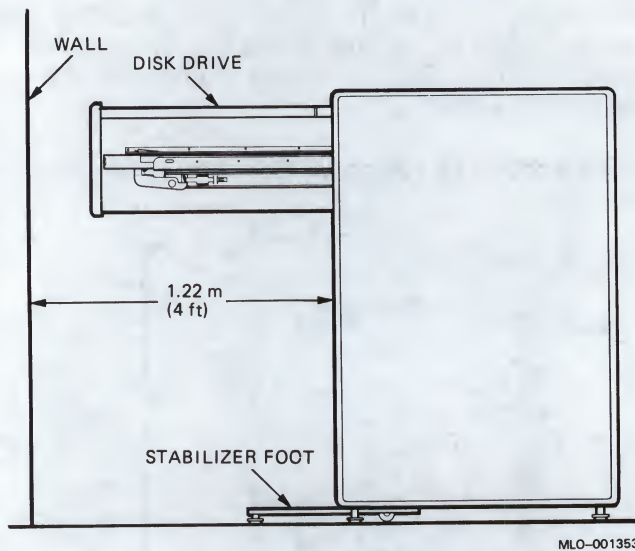
Figure 2-6 shows the dimensions of a MicroVAX system in the H9642 cabinet when shipping materials have been removed.

Leave a minimum of 1.2 m (4 ft) from the front of the system to the nearest stationary object so the disk drives can be extended. The drives are approximately 86.5 cm (33.75 in) deep. Figure 2-7 shows the H9642 with the disk drives removed.

**Figure 2-6: Dimensions of a MicroVAX System in the H9642 Cabinet**



**Figure 2-7: H9642 With Disk Drive Extended**

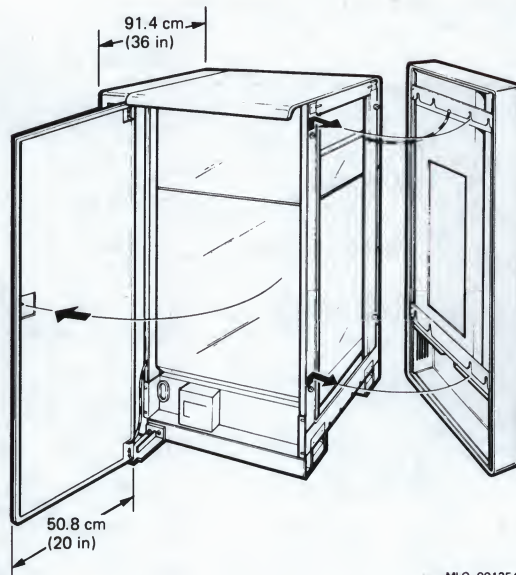


Leave a minimum of 1.2 m (4 ft) from the rear of the system to the nearest stationary object, so the rear door can be opened or removed. The rear door is approximately 51.3 cm (20.0 in) wide.

Leave space on each side of the system to remove the side panels. Figure 2-8 shows an H9642 with the door open.



**Figure 2-8: H9642 With Door Open**



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### **2.5.2 Heat, Humidity, Electrical Requirements, and Acoustics**

The H9642 cabinet operates within or at the values listed for temperature and humidity ranges, power requirements, and noise levels in Table 2-5.

**Table 2-5: H9642 System Specifications****Heat Dissipation, Temperature, and Humidity Ranges**

<b>Condition</b>		<b>Measure</b>
Heat dissipation		5872 BTU/h at 120 Vac 6022 BTU/h at 240 Vac
Temperature	Operating:	15°C to 32°C 59°F to 90°F
	Nonoperating:	-40°C to 66°C -40°F to 151°F
Temperature rate of change	Operating:	11°C per hour maximum 19.8°F per hour maximum
Relative humidity	Operating:	20% to 80% (noncondensing)
	Nonoperating:	10% to 90%
Maximum altitude	Operating:	2440 m (8000 ft)
	Nonoperating:	4900 m (16,000 ft)

**NOTE:** Decrease the operating temperature range values by 1.8°C per 1000 m above sea level (1°F per 1000 ft).

**Electrical Requirements**

<b>Nominal AC Voltage ⇒</b>	<b>120 Vac</b>	<b>220-240 Vac</b>
Voltage range	90 to 128 Vac	184 to 256 Vac
Power source phase	Single	Single
Nominal frequency	60 Hz	50 Hz
Frequency range	59 to 61 Hz	49 to 51 Hz
Typical steady-state current	16.4 A	8.6 A
Maximum steady-state current	24 A	12 A
Typical power consumption	1722 W	1766 W
Maximum power consumption	3132 W	3216 W

**NOTE:** Maximum current and power values represent systems with two RA81 disk drives installed.

**Table 2-5 (Cont.): H9642 System Specifications**

**Operating Acoustic Emission Levels**

	<b>LNPE (B)</b>	<b>LPA (dB)</b>
RA60 and RA81	7.6	64
No RA drives	6.0	45
Recommended placement		Computer room

LNPE = Noise power emission level (A-weighted sound power level) measured in bels reference 1 picowatt.

LPA = Sound pressure measured in decibels at 1.0 m from the front edge of the unit and 1.5 m above the floor.

Levels may be lower than those shown, depending on the kind and number of mass storage devices in the system.

All data measured in accordance with ANSI S12.10-1985 (American National Standards Institute) and ISO/DIS 7779 (International Standards Organization).

**CAUTION:**

- *For 120 Vac operation, MicroVAX systems in the H9642 cabinet must use a NEMA (National Electrical Manufacturers Association) L5-30R ac electrical receptacle rated at 30 A (U.S.).*
- *For 240 Vac operation, most MicroVAX systems in the H9642 cabinet do not use the NEMA connector. Those 240 Vac systems that do use the NEMA connector operate on 60 Hz. Contact your DIGITAL sales representative for information on any restrictions that may apply to 240 Vac, 60 Hz systems.*

**NOTE:** *To operate the H9642 cabinet at 240 Vac, obtain the appropriate power cable for use in your country. See the appendix for order numbers.*



## 2.6 Specifications for the H9644 Cabinet

Use the information in this section to prepare your site for MicroVAX systems in the H9644 cabinet.

### 2.6.1 Dimensions

Systems that use the H9644 cabinet are shipped in large containers secured to wooden pallets by metal hold-down brackets. Other containers arriving with your shipment may contain terminals, printers, software, and other options. Plan to use about 3 m (10 ft) of floor space for removing each cabinet from its pallet.

**WARNING:** *Do not try to move or lift this equipment without a forklift.*

The cabinet is mounted on four wheels.

An H9644 cabinet, fully loaded with four RA-series disk drives and a TK70 tape drive weighs 206.6 kg (455 lb). Plan your installation accordingly.

Figure 2-9 shows the dimensions of the shipping container of a MicroVAX system in the H9644 cabinet.

**Figure 2-9: Dimensions of the Shipping Container of a MicroVAX System in the H9644 Cabinet**

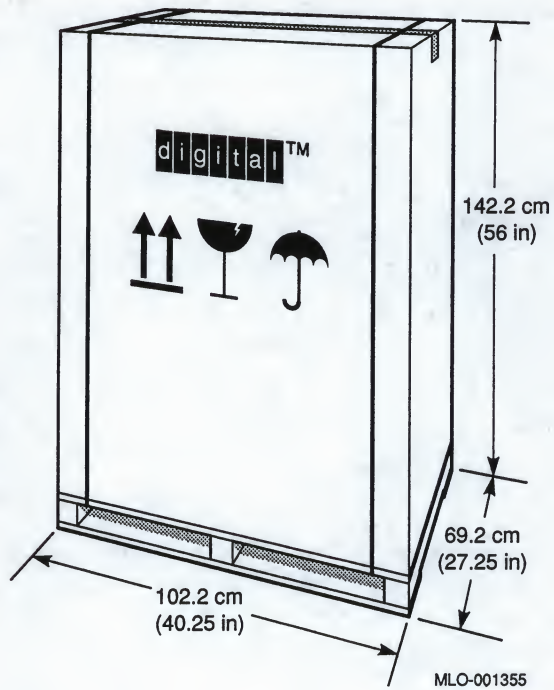
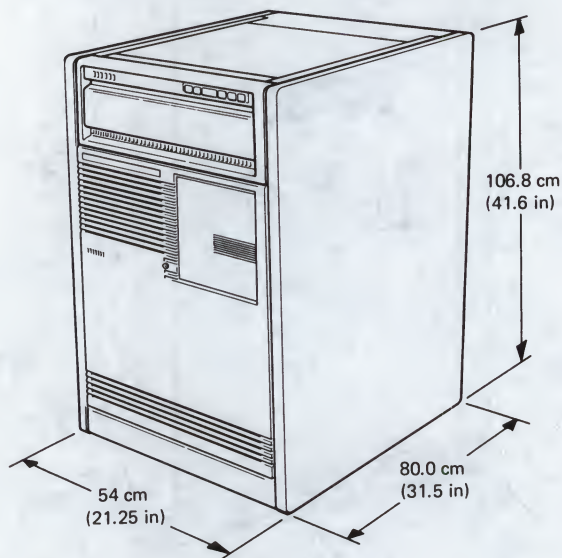


Figure 2-10 shows the dimensions of an unpacked MicroVAX system in the H9644 cabinet.

**Figure 2-10: Dimensions of a MicroVAX System in the H9644 Cabinet**



WEIGHT: 124.9 kg to 206.6 kg  
(275 lb to 455 lb)

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If your system includes an auxiliary cabinet with an RA82 drive in the bottom, leave a minimum of 1.2 m (4 ft) from the front of the cabinet to the nearest stationary object so the disk drives can be extended. The drive is approximately 86.5 cm (33.75 in) deep.

Leave approximately 1 m (3 ft) from the rear of the system to the nearest stationary object so the rear door can be removed.

For cabinets containing a TU81E tape deck, leave enough room above the cabinet to raise the cover of the tape deck.



## 2.6.2 Heat, Humidity, Electrical Requirements, and Acoustics

The H9644 cabinet operates within or at the values listed in Table 2-6 for temperature and humidity ranges, power requirements and noise levels. Included are the electrical requirements for MicroVAX 3600 and VAXserver 3600 and 3900 systems that use one H9644 cabinet. The requirements for a system with a second H9644 cabinet are included.

### CAUTION:

*For 120 Vac operation, MicroVAX systems in the H9644 cabinet must use a NEMA L5-30R ac electrical receptacle rated at 30 A (U.S.). These systems require a CSA 12-3 type power cable.*

*For 240 Vac operation, MicroVAX systems in the H9644 cabinet must use a NEMA L6-15R ac electrical receptacle rated at 15 A (U.S.). Contact your DIGITAL sales representative for information on any restrictions that may apply to 240 Vac, 60 Hz systems.*

*To operate a MicroVAX system in the H9644 cabinet at 240 Vac outside the U.S., obtain the appropriate power cable for use in your country. See the appendix for order numbers.*

**Table 2-6: H9644 System Specifications****Heat Dissipation, Temperature, and Humidity Ranges**

<b>Condition</b>		<b>Measure</b>
Heat dissipation	With RA82	4605 BTU/h
Heat dissipation	Without RA82	2408 BTU/h
Temperature	Operating:	15°C to 32°C 59°F to 90°F
	Nonoperating:	-40°C to 66°C -40°F to 151°F
Temperature rate of change	Operating:	11°C per hour maximum 19.8°F per hour maximum
	Nonoperating:	10% to 90%
Relative humidity	Operating:	20% to 80% (noncondensing)
	Nonoperating:	10% to 90%
Maximum altitude	Operating:	2440 m (8000 ft)
	Nonoperating:	4900 m (16,000 ft)

**NOTE:** Decrease the operating temperature range values by 1.8°C per 1000 m above sea level (1°F per 1000 ft).

**Electrical Requirements**

<b>Nominal AC Voltage ⇒</b>	<b>100 Vac</b>	<b>120 Vac</b>	<b>220-240 Vac</b>
Voltage range	Not used	90 to 128 Vac	184 to 256 Vac
Power source phase	Not used	Single	Single
Nominal frequency	Not used	50 to 60 Hz	50 to 60 Hz
Frequency range	Not used	47 to 63 Hz	47 to 63 Hz
Maximum steady-state current at nominal voltage	Not used	11.3 A	7.0 A
Maximum steady-state current at minimum voltage	Not used	15 A	8.2 A
Maximum inrush current	Not used	75 A	110 A
Typical power consumption	Not used	965 W	1060 W

**Table 2-6 (Cont.): H9644 System Specifications**

**Operating Acoustic Emission Levels**

	<b>LNPE (B)</b>	<b>LPA (dB)</b>
RA90 (60 Hz)	6.6	55
RA82-AA (60 Hz)	7.3	62
RA82-AD (50 Hz)	7.1	60
No RA drives	5.3	42
Recommended placement		Computer room

LNPE = Noise power emission level (A-weighted sound power level) measured in bels reference 1 picowatt.

LPA = Sound pressure measured in decibels at 1.0 m from the front edge of the unit and 1.5 m above the floor.

Levels may be lower than those shown, depending on the kind and number of mass storage devices in the system.

All data measured in accordance with ANSI S12.10-1985 (American National Standards Institute) and ISO/DIS 7779 (International Standards Organization).



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## Appendix A

# Power Cable Order Numbers

If you wish to operate the MicroVAX system at 240 Vac, refer to the table appropriate to your system and order the power cable listed for 240 Vac operation in your country. For more information on 240 Vac operation, check with your DIGITAL sales representative.

Table A-1 lists the power cables used to operate a MicroVAX system at 240 Vac in the BA23 and BA123 enclosures.

**Table A-1: Power Cables for the BA23 and BA123 Enclosures**

Power Cable Number	Country	Service
BN02A-2E	United Kingdom and Ireland	240 Vac
BN03A-2E	Austria, Belgium, Czechoslovakia, Finland, France, Germany, Hungary, Netherlands, Norway, Poland, Portugal, Spain, and Sweden	240 Vac
BN04A-2E	Switzerland	240 Vac
BN05A-2E	Australia and New Zealand	240 Vac
BN06A-2E	Denmark	240 Vac
BN07A-2E	Italy	240 Vac
BN18L-2E	Israel	240 Vac
BN18J-1K	U.S. and Japan	240 Vac

Table A-2 lists the power cables used to operate a MicroVAX system at 240 Vac in the BA213 and a MicroVAX 3600 host with a B213A expander.

**Table A-2: Power Cables for the BA213 Enclosure and MicroVAX 3600 Host With a B213A Expander**

<b>Power Cable Number</b>	<b>Country</b>	<b>Service</b>
BN20B-2E	Japan	240 Vac
BN20C-2E	Australia and New Zealand	240 Vac
BN20D-2E	Austria, Belgium, Czechoslovakia, Finland, France, Germany, Hungary, Netherlands, Norway, Poland, Portugal, Spain, and Sweden	240 Vac
BN20E-2E	United Kingdom and Ireland	240 Vac
BN20F-2E	Switzerland	240 Vac
BN20H-2E	Denmark	240 Vac
BN20K-2E	India, South Africa	240 Vac
BN20L-2E	Israel	240 Vac
BN20J-2E	Italy	240 Vac
BN20A-2E	U.S.	240 Vac

Table A-3 lists the power cables used to operate a MicroVAX 3500/3800 system at 240 Vac and 220 Vac in the B213A expander and a B213F expander.

**Table A-3: Power Cables for MicroVAX 3500/3800 Systems With B213A or B213F Expanders**

<b>Power Cable Number</b>	<b>Service</b>
886A (Controlled Power Switch)	120 Vac
886B (Controlled Power Switch)	240 Vac
17-00365-06	240 Vac
BN20A-2E	115 Vac

**NOTES:** One BN20A-2E power cable is included with the MicroVAX 3500 or MicroVAX 3800 system shipment; a second is included with the B213A expander shipment.

The country-specific power cable for the 886B controlled power switch is included with the B213A expander shipment, but must be specified in the customer order.

Table A-4 lists the power cables used to operate MicroVAX systems at 240 Vac and 220 Vac in the H9642 and H9644 cabinets.



**Table A-4: Power Cables for the H9642 and H9644 Cabinets**

<b>Power Cable Number</b>	<b>Country</b>	<b>Service</b>
BN18B-4E	United Kingdom and Ireland	240 Vac
BN18C-4E	Austria, Belgium, Finland, France, Germany, Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland	220 Vac
BN18D-4E	Australia and New Zealand	240/230 Vac
BN18E-4E	Italy and Switzerland	220 Vac
BN18F-4E	Israel	230 Vac
BN18H-4E	India	220 Vac
BN18P-4E	Denmark	240 Vac

Table A-5 lists the power cables used to operate the MicroVAX system at 240 Vac in the BA215 enclosure and for the R215F expander.

**Table A-5: Power Cables for the BA215 Enclosure and for the R215F Expander**

<b>Power Cable Number</b>	<b>Country</b>	<b>Service</b>
BN20N-2E	Japan, not available in U.S.	240 Vac
BN19J-2E	Australia and New Zealand	240 Vac
BN03B-2E	Austria, Belgium, Czechoslovakia, Finland, France, Germany, Hungary, Netherlands, Norway, Poland, Portugal, Spain, and Sweden	240 Vac
BN19B-2E	United Kingdom and Ireland	240 Vac
BN19F-2E	Switzerland	240 Vac
BN19L-2E	Denmark	240 Vac
BN19T-2E	India, South Africa	240 Vac
BN19Y-2E	Israel	240 Vac
BN19N-2E	Italy	240 Vac

Table A-6 lists the power cables used to operate the MicroVAX system at 240 Vac in the H9642 and H9644 cabinets and for the 886B controlled power switch.

**Table A-6: Power Cables for the H9642 and H9644 Cabinets and the 886B Controlled Power Switch**

<b>Power Cable Number</b>	<b>Country</b>	<b>Service</b>
BN18B-4E	United Kingdom and Ireland	240 Vac
BN18C-4E	Austria, Belgium, Finland, France, Germany, Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland	220 Vac
BN18D-4E	Australia and New Zealand	240/230 Vac
BN18E-4E	Italy and Switzerland	220 Vac
BN18F-4E	Israel	230 Vac
BN18H-4E	India	220 Vac
BN18P-4E	Denmark	

Table A-7 lists the power cables used to operate MicroVAX 3500 and MicroVAX 3600 systems at 110 Vac in the BA213 enclosure.

**Table A-7: Power Cables for MicroVAX 3500/ 3600 Systems in the BA213 Enclosure**

<b>Power Cable Number</b>	<b>Country</b>	<b>Service</b>
BN20A-2E	U.S.	115 Vac
BN18T-4E	U.S.	115 Vac

Table A-8 lists the power cables used to operate MicroVAX 3300 systems at 110 Vac in the BA215 enclosure.

**Table A-8: Power Cables for the MicroVAX 3300 System in the BA215 Enclosure**

<b>Power Cable Number</b>	<b>Country</b>	<b>Service</b>
BN20M-2E	U.S., Canada, Japan, and Mexico	120 Vac

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* Prepaid orders from Puerto Rico, call DIGITAL's local subsidiary (809-754-7575)		
Canada	800-267-6219 (for software documentation)  613-592-5111 (for hardware documentation)	Digital Equipment of Canada Ltd. 100 Herzberg Road Kanata, Ontario, Canada K2K 2A6 Attn: Direct Order desk
Internal orders (for software documentation)	—	Software Distribution Center (SDC) Digital Equipment Corporation Westminster, MA 01473
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MicroVAX  
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